

### **REMARKS**

Reconsideration of the application in light of the following remarks is respectfully requested.

#### **Status of the Claims**

Claims 1-5 are pending. Claims 1-5 have been amended. No new matter has been added.

#### **Rejections under 35 U.S.C. § 112**

Claims 1-5 are rejected under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. The Examiner contends that it is unclear which limitation is referenced by the word “it” in line 11 of claim 1 of the application-as-filed.

In response to the Examiner’s objections, Applicant has amended claim 1 to more particularly point out and distinctly claim the subject matter of the invention. In particular, Applicant has removed the indefinite subject pronoun “it” from the relevant portion of claim 1. The relevant portion of claim 1 now reads:

a third discharge chamber ~~(7)~~ in ~~constant~~ fluid communication with: the first discharge chamber (4) and the second discharge chamber (6) and opened to a discharge tube (5), characterized in that it comprises; and a valve means (22) provided in the fluid communication between the first and third discharge chambers (4, 7) . . .

There is no ambiguity in amended claim 1. As presently worded, it is clear that the valve means 22 is a component of the discharge system. Therefore, Applicant respectfully requests reconsideration and withdrawal of this rejection.

### **Rejections under 35 U.S.C. § 103**

Claims 1-5 are rejected under 25 U.S.C. § 103 as being unpatentable over U.S. patent application publication 2002/0136646 to Seo et al. (hereinafter “Seo”) in view of WIPO patent application publication WO 99/53200 to Fagotti (hereinafter “Fagotti”).

The Examiner contends that Seo discloses every single element of independent claim 1 except the use of pressure-sensitive valve means in the orifice that separates the first discharge chamber from the third discharge chamber. The Examiner further contends that Fagotti discloses the use of such pressure-sensitive valve means, and that it would have been obvious to one of ordinary skill in the art at the time of invention to combine Seo with Fagotti.

Seo discloses an apparatus that includes a compression chamber **131**, a first discharge chamber **62**, a second discharge chamber **133b**, a third discharge chamber **133a**, and an interconnecting tube **136** which allows fluid to flow from the second discharge chamber **133b** to the third discharge chamber **133a**. The second and third discharge chambers are connected to the first discharge chamber **in parallel**; that is, fluid from the first discharge chamber **62** can and will flow into both the second discharge chamber **133b** and the third discharge chamber **133a** (see, e.g., Figure 5 and ¶ 36). Fluid that flows directly from the first discharge chamber into the third discharge chamber **133a** is output through the discharge tube **135**. Fluid that flows from the first discharge chamber **62** into the second discharge chamber **133b** is sent through the interconnecting tube **136** into the third discharge chamber **133a**, where it is output through the discharge tube **135**.

Fagotti discloses an apparatus that includes a plurality of compression chambers connected **in series**. In Fagotti, fluid flows from the compression chamber through a single series of discharge chambers (see, e.g., Fig. 2, noting the directions of the arrows indicating fluid flow). The fluid flow in Fagotti never splits into different paths like the parallel arrangement in Seo. Thus, Fagotti does not disclose the use of a parallel arrangement of discharge chambers. Fagotti does disclose the use of a valve means **30** that is sensitive to the incident fluid flux. The purpose of this valve means is to change the cross-sectional area of orifice **14** so as to limit the flow rate into the discharge tube. The

valve means **30** does not change the apparatus in Fagotti from a series to a parallel arrangement; it merely regulates the flow rate through its static series arrangement.

By contrast, amended independent claim 1 teaches the use of a valve means that switches the entire discharge system from a “series” arrangement to a “parallel” arrangement when the fluid flux incident on the valve reaches a predetermined threshold (see, e.g., Figure 3 and ¶ 35 of the present application). When the fluid flux is low, the valve means remains closed, which prevents fluid from flowing directly into the third discharge chamber. This presents a “series” arrangement because fluid must flow along a single path. This is illustrated in Figure 3 by the path flowing from the first discharge chamber **4**, into the second discharge chamber **6**, through the connecting tube **8** into the third discharge chamber **7**, and out through the discharge tube **5**.

When the fluid flux is high (i.e. reaches the threshold), the valve means opens, which allows fluid from the first discharge chamber to flow into either the second discharge chamber or directly into the third discharge chamber. This presents a “parallel” arrangement because the fluid can now follow two paths; either the path described in the “series” arrangement above, or, as illustrated in Figure 3, a path flowing directly from the first discharge chamber **4** into the third discharge chamber **7** and out through the discharge tube **5**.

Fagotti and Seo do not disclose or suggest, either alone or in combination, the use of a valve that automatically switches a discharge apparatus from a “series” arrangement to a “parallel” arrangement when the incident fluid flux reaches a threshold value, and it would not have been obvious to one of ordinary skill in the art at the time of invention to implement such a valve. Fagotti merely discloses a static “series” arrangement, while Seo merely discloses a static “parallel” arrangement.

The claimed invention has significant advantages over the prior art, including Fagotti and Seo. One advantage of the present invention is that it comprises a “series” arrangement when the fluid flux is low, and a “parallel” arrangement when the fluid flux is high. A series arrangement is desirable at low fluid flux because, in such a situation, relatively little power is needed to drive the

fluid through the system. Therefore, it is advantageous to have a long flow path so as to increase noise dampening at low fluid flux. A series arrangement provides such a long flow path.

Furthermore, a parallel arrangement is advantageous at high fluid flux because, in such a situation, a relatively large amount of power is needed to drive the fluid through the system. Therefore, it is advantageous to allow at least a part of the fluid to proceed through a shorter fluid path (i.e. the path flowing from the first discharge chamber directly into the third discharge chamber) so as to decrease the power needed. A parallel arrangement allows at least part of the fluid to follow a shorter flow path, which decreases the power needed to drive the fluid through the system.

The claimed discharge system operates optimally with respect to noise dampening and power usage at both low and high fluid flux because it automatically switches between a “parallel” arrangement and a “series” arrangement in response to changes in the fluid flux. This automatic switching is accomplished by the claimed valve means. Neither Fagotti nor Seo disclose, teach, or suggest the use of a valve means to automatically switch a discharge apparatus from a “parallel” arrangement to a “series” arrangement in response to changes in the fluid flux, and it would not have been obvious to one of ordinary skill in the art at the time of invention to implement such a design.

Independent claim 1 is in condition for allowance because it includes nonobvious elements that were not disclosed or suggested in either Seo or Fagotti. Applicants respectfully request reconsideration and withdrawal of this rejection.

Claims 2-5 all depend on independent base claim 1 and are in condition for allowance based on their dependency upon an allowable base claim. Applicants respectfully request reconsideration and withdrawal of this rejection.

**CONCLUSION**

Each and every point raised in the Office Action dated July 18, 2008 has been addressed on the basis of the above amendments and remarks. In view of the foregoing it is believed that claims 1-5 are in condition for allowance and it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

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Respectfully submitted,

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